



U.S. ENVIRONMENTAL PROTECTION AGENCY

Dissolved Oxygen: Moving Towards National Marine Water Quality Criteria



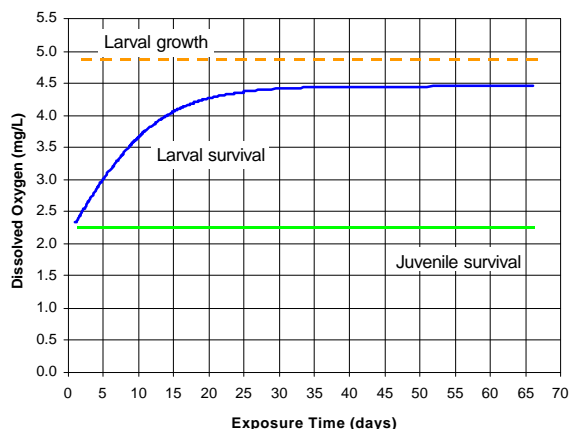
Background

Researchers at the U.S.EPA's Office of Research and Development have conducted studies designed to aid in the development of saltwater dissolved oxygen criteria (DO) for over 15 years. This effort, largely conducted by the Atlantic Ecology Division (AED), was focused on the effects of low dissolved oxygen on coastal and estuarine organisms found in the Virginian Province, a region located between Cape Cod, MA and Cape Hatteras, NC. The approach combined features of traditional Water Quality Criteria (WQC) with a new biological framework that includes a temporal, or time, component for fluxes in DO, and establishes separate criteria for different life stages (larvae versus juveniles and adults).



AED's flow-through DO testing system

Draft DO WQC Criteria



The U.S. EPA's Office of Water, using information from these studies, published draft WQC for dissolved oxygen for marine waters in the Virginian Province. The criteria apply to both continuous (persistent) and cyclic (diel, tidal, or episodic) hypoxia. The limits identified are based on laboratory findings, but are supported in part by field observations.

Summary of criteria for persistent exposure. Criterion depends on life stage exposed and the duration of the exposure (see draft document for Ambient Water Quality Criteria for Dissolved Oxygen—November 1999 for details).

Current Activities

Although, the geographic scope of this past effort was limited to the Virginian Province of the Atlantic coast of the United States, the framework is expected to work for other regions. AED is collaborating with the Gulf Ecology Division in examining the extrapolation of this framework to species from the southeast and the Gulf of Mexico coasts. This study is expected to be completed by early 2001 and will establish the applicability of the existing data for use in setting dissolved oxygen limits beyond the Virginian Province.

Future Activities

The ultimate goal is to provide EPA's Office of Water with the necessary data to create dissolved oxygen criteria for all coastal regions of the contiguous United States. Once the work for the southeast and Gulf of Mexico is completed, west coast efforts will begin. In collaboration with EPA's Western Ecology Division, selection of species of concern for the Pacific coast of the United States should be completed in 2000, and preliminary testing is tentatively scheduled for 2001.

Further Information

For further information, please contact Glen Thursby at the National Health and Environmental Effects Research Laboratory's (NHEERL) Atlantic Ecology Division (401)782-3178 or thursby.glen@epa.gov; or Laura Coiro (NHEERL/AED) at (401)782-9603 or coiro.laura@epa.gov. The text of the draft dissolved oxygen criteria document is available at <http://www.epa.gov/ost/standards/dissolved/>.